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October 17, 2002

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TECH CENTER 1600/2900

Commissioner for Patents
Washington, DC 20231

Re: U.S. Application No. 09/688,069
Filed: October 14, 2000
Title: *Nucleic Acid Sequences to Proteins Involved in
Tocopherol Synthesis*
Applicants: Sai S. SUBRAMANIAM *et al.*
Atty. Docket: 16515.054

Sir:

The following documents are forwarded herewith for appropriate action by the U.S.
Patent and Trademark Office (PTO):

1. a Response to Restriction Requirement mailed September 17, 2002; and
2. a return postcard.

Please stamp the attached postcard with the filing date of these documents and return it to
our courier.

In the event that extensions of time are necessary to prevent abandonment of this
application, then such extensions of time are hereby petitioned. Applicants do not believe any
fees are due in conjunction with this filing. However, if any fees under 37 C.F.R. §§ 1.16 or 1.17
are required in the present application, including any fees for extensions of time, then the
Commissioner is hereby authorized to charge such fees to Arnold & Porter Deposit Account No.
50-2387, referencing matter number 16515.054. A duplicate copy of this letter is enclosed.

Very truly yours,

David R. Marsh (Reg. No. 41,408)
Andrew S. Brenc (Reg. No. 45,534)
Dawn M. Gardner (Reg. No. 44,118)

Enclosures



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE TECH CENTER 1600/2900

#14
AP
10/21/02

In re Patent Application of:

Sai S. SUBRAMANIAM *et al.*

Appl. No.: 09/688,069

Filed: October 14, 2000

For: **Nucleic Acid Sequences to
Proteins Involved in Tocopherol
Synthesis**

Art Unit: 1638

Examiner: E. MCELWAIN

Atty. Docket: 16515.054

Response to Restriction Requirement

Commissioner for Patents
Washington, D.C. 20231

Sir:

In response to the Office Action mailed September 17, 2002, Paper No. 13, Applicants submit the following response.

Remarks

The application presently contains claims 1-41. In the Office Action dated September 17, 2002, the Examiner required restriction to one of the following inventions under 35 U.S.C. § 121:

Group I: Claims 1 and 2 to the extent that the claims are drawn to a nucleic acid encoding a tocopherol cyclase active in the cyclization of 2,3-dimethyl-5-phytylplastoquinol to tocopherol, classified in Class 536, subclass 23.2.

Group II: Claims 1 and 3 to the extent that the claims are drawn to a nucleic acid encoding a tocopherol cyclase active in the cyclization of 2,3-dimethyl-5-

geranylgeranylplastoquinol to tocotrienol, classified in Class 536, subclass 23.2.

Group III: Claims 1 and 4-9 to the extent that the claims are drawn to a tocopherol cyclase gene from eukaryotes, classified in Class 536, subclass 23.2.

Group IV: Claims 1 and 10-12 to the extent that the claims are drawn to a tocopherol cyclase gene from prokaryotes, classified in Class 536, subclass 23.7.

Group V: Claims 13-16, 18, 19, and 21 to the extent that the claims are drawn to a construct comprising a tocopherol cyclase gene from eukaryotes, classified in Class 435, subclass 320.1.

Group VI: Claims 1, 2, 4, 8, 10-15, and 17-23 to the extent that the claims are drawn to a tocopherol cyclase gene from procaryotes, classified in Class 435, subclass 320.

Group VII: Claim 20 drawn to feed, classified in Class 426, subclass 615.

Group VIII: Claims 22-25 drawn to oil, classified in Class 426, subclass 601.

Group IX: Claims 26-41 to the extent that the claims are drawn to a method of producing tocopherol in a cell, classified in Class 435, subclass 69.1.

Group X: Claims 26-41 to the extent that the claims are drawn to a method of producing tocotrienol in a cell, classified in Class 800, subclass 281.

Applicants respectfully traverse the restriction requirement, and provisionally elect the claims of Group IV, Claims 1 and 10-12 to the extent that the claims are drawn to a tocopherol cyclase gene from prokaryotes, classified in Class 536, subclass 23.7, for further prosecution.

Initially, Applicants would like to bring the Examiner's attention to the fact that Groups IV and VI, as drafted by the Examiner, are identical in subject matter but not in the claims covered. It is believed that the Examiner intended that Group VI include claims drawn to a

construct comprising a tocopherol cyclase gene from prokaryotes, and Applicants will treat it as such.

Applicants submit that the complete examination of the application would be handled most expeditiously by treating all of the pending claims as a single entity. As Section 803 of the MPEP directs, "[i]f the search and examination of an entire application can be made without serious burden, the Examiner must examine it on the merits, even though it includes claims to distinct or independent inventions." Applicants respectfully submit that the Examiner has not shown that a search and examination of the entire application would cause a serious burden. Rather, a serious burden would arise if the application were restricted into the ten groups of claims. Therefore, Applicants request that all of the claims be examined together at this time.

If the Examiner finds that there is an undue burden to examine all of the claims together at this time, Applicants respectfully request that at least one of the following modifications to the Restriction Requirement be accepted by the Examiner.

At the very least, it is believed that the claims of Groups I and II should be considered together. The same tocopherol cyclase enzyme is involved in both the cyclization of the phytylplastoquinol to tocopherol and the geranylgeranylplastoquinol to tocotrienol. *See, e.g.* Porfivora, S., Bermuller, E., Tropf, S., Lemke, R., Dormann, P, Isolation of an *Arabidopsis* mutant lacking vitamin E and identification of a cyclase essential for all tocopherol biosynthesis. *PNAS* 99:12495-12500 (2002). Thus, only one enzyme (tocopherol cyclase) is encompassed by claims 1-3. Since only one enzyme would have to be searched, no serious burden would be imposed on the Examiner by searching both groups simultaneously, so at the very least, the Restriction Requirement should be modified so that both Groups I and II are examined together.

Applicants also believe that the Restriction Requirement should be modified to consider

the claims of Groups I, II, IV and VI together. §803 of the MPEP states that “an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents...” As clearly indicated by the Examiner, the isolated nucleic acid sequence encoding a tocopherol cyclase encompasses constructs comprising a nucleic acid sequence encoding a tocopherol cyclase. Thus, the scope of the claimed inventions of Groups I, II, IV and VI are so similar that it would not support separate patents, and the restriction of the claims included in these Groups is improper. In light of this, Applicants request that the Restriction Requirement be modified so that Groups I, II, IV and VI are examined together.

Furthermore, the Restriction Requirement should be further modified to examine the claims of Groups I, II, IV, VI, IX and X together. As noted in §806.05(f) of the MPEP, a process of making a product and the product made are distinct inventions if the process as claimed can be used to make other and different product, or if the product as claimed can be made by another and materially different process. The Examiner has not met her burden in identifying either other products that can be made by the claimed process, or other processes which could be used to make the claimed product, and therefore has not met her burden of proving that the inventions of Groups IX and X are distinct from the inventions of Groups I, II, IV, VI, IX and X. In light of this, Applicants request that the Restriction Requirement be further modified so that Groups I, II, IV, VI, IX and X are examined together.

The Restriction Requirement may be further modified to examine the claims of Groups I, II, III, IV, V, VI, IX and X together. 37 C.F.R. § 1.141 states that “...more than one species of an invention...may be specifically claimed in different claims in one national application, provided the application also includes an allowable claim generic to all the claimed species and all the claims to species in excess of one are written in dependent form...or otherwise include all the

limitations of the generic claim." Tocopherol cyclase genes from prokaryotes (as claimed in claims 1 and 10-12) and tocopherol cyclase genes from eukaryotes (as claimed in claims 1 and 4-9) are each species of the broader genus of tocopherol cyclase genes (as broadly claimed in claims 1-3). In accordance with 37 C.F.R. § 1.141, each of the species claims are dependent on the genus claims. In light of this, it is requested that the Restriction Requirement be modified to include the claims of Groups III and IV together with the claims of Groups I, II, V, VI, IX and X.

Based upon the foregoing, Applicants submit that the restriction requirement is improper and therefore should be withdrawn. Alternatively, Applicants request that the Examiner modify the Restriction Requirement to examine the claims of Groups I, II, III, IV, V, VI, IX and X together. However, in order to facilitate prosecution, Applicants have provisionally elected, with traverse, Group IV, Claims 1 and 10-12.

It is not believed that extensions of time or fees for net addition of claims are required beyond those that may otherwise be provided for in the documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to our Deposit Account Number 50-1824, referencing docket number 16515.054. Applicants likewise authorize a charge to Deposit Account Number 50-1824 for any other fees related to the present application that are not otherwise provided for in the accompanying documents.

Should the Examiner have any questions regarding this application, the Examiner is encouraged to contact Applicants' undersigned representative at (202) 942-5000.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "David R. Marsh", written over a horizontal line.

David R. Marsh (Reg. No. 41,408)
Andrew S. Brenc (Reg. No. 45,534)
Dawn M. Gardner, (Reg. No. 44,118)

Date: October 17, 2002

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